SYLLABUS
EGR 507 and EM 507: Life Cycle Product Management
Summer 2025 Offered Fully Online

Course Overview

Are you ready to master the strategies that drive a product's success long after its launch? *Life Cycle Product Management* equips you with the dynamic tools and techniques needed to lead complex, high-tech products through every phase of their life cycle—from introduction to maturity and beyond. In this action-packed course, you'll gain the insights, skills, and frameworks to think like an engineering manager and problem-solve in real-world scenarios.

We focus on what happens after the launch—because sustaining and evolving a product is where leaders thrive. You'll learn how to manage customer expectations, oversee product evolution, and adapt to competitive and market disruptions, all while balancing technical challenges with business priorities. Through engaging **case studies**, interactive team exercises, and practical applications, you'll tackle critical topics like market segmentation, pricing strategies, manufacturing, outsourcing and supply chain, technical support, and service design—all the elements that make or break a product's success.

This course adopts a **systems-thinking approach**, providing you with a 360° view of product life cycle management. Whether you're leading a new product, navigating upgrades, or strategizing a response to disruptive competitors, you'll leave with actionable skills you can apply immediately in any engineering or technology role.

This course covers the management of complex technical products during all product life cycle phases, but primarily after the product has been launched into the market (EGR 590-608 / EM 589-002 Managing New Product Creation covers the product launch). It is a broad survey of all the tools needed by the technical product manager throughout the life cycle of a complex product. The course is taught with a systems approach and from the engineering manager's viewpoint.

The product life cycle includes all aspects of managing products from launch through maturity. The course covers understanding customer needs, product design and packaging, market segmentation, pricing, sales and distribution, technical sales support, training, technical services and support, product evolution and upgrades, and disruption management. A particular emphasis is placed on the need for complex high-technology products and related engineering services. Business topics are covered as necessary to meet the needs of the engineering manager. Case studies are used extensively throughout this course. Students are expected to learn good communication skills.

This course is part of a two-course series in Product Management (EGR 590-608 Managing New Product Creation, and EGR 507 Product Lifecycle Management). The courses may be taken in either order, or you may just take one course. Students who take both courses can use the same product for the course project in each, resulting in a design and development plan, business plan, and product management plan for the product. Each course is self-contained, however.

This course is offered in two formats: 1) In-class/hybrid, and 2) fully online/ asynchronous. Both formats cover the same content but in a slightly different manner. In-class sections hear lectures live and work in small groups on the case studies. Fully online sections will view the lectures online and will complete case studies in the forum with others. Case studies result in a 5-slide deck for each team. Both in-class and online students will be asked to engage in conversation in the forum on current topics. Grading will be identical in both in-class and online sections.

Why Take This Course?

- **Learn by Doing**: Work on real-world case studies and create actionable 5-slide product strategies that mirror industry expectations.
- **Bridge Engineering and Business**: Master essential business concepts—like ROI analysis and life cycle costs—through the lens of technical management.
- **Flexible Learning**: Choose between live, in-person collaboration or asynchronous, fully online learning—both formats ensure you get the same rigorous, engaging experience.
- **Build Your Portfolio**: If you're taking the *New Product Creation* (EGR 590-608) or *Product Lifecycle* courses as a series, you'll create a full-fledged product strategy from concept to end-of-life management.

By the end of this course, you'll be empowered to lead teams, drive product performance, and ensure the long-term success of even the most complex technologies.

Who Should Enroll?

This course is perfect for graduate students with an engineering or science background who are ready to:

- Transition from an individual contributor role to a technical leader or product manager.
- Understand the business of engineering and learn how to balance cost, quality, and customer satisfaction.
- Explore agile approaches to product evolution and master real-world problem-solving.

Course Topics

This course dives deep into the tools and strategies needed to manage technical products throughout their life cycles. Topics include:

- **The Product Lifecycle Model**: See how products evolve from market entry to decline—and learn how to manage each phase.
- **Understanding the Customer**: Use data, user insights, and surveys to define what customers really want.
- **Dynamic Product Teams**: Build and lead cross-functional teams that innovate, communicate, and deliver results.
- **Agile Product Management**: Discover agile principles for evolving products to meet changing markets and customer needs.
- **Market Positioning and Pricing**: Learn the art of differentiating your product while maximizing value.
- **Sales and Distribution Strategies**: Develop plans to take your product to market and support it throughout its life cycle.
- **Technical Service and Support**: Manage customer support systems, training programs, and warranties for high-impact results.
- **Managing Disruption**: Respond quickly to competition, innovation, and market challenges with a proactive mindset.
- **Product ROI and Cost Management**: Use life cycle cost analysis and ROI calculations to make sound decisions that balance growth with profitability.
- **PLM Tools and Software**: Explore cutting-edge Product Lifecycle Management (PLM) tools used by industry leaders

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Learning Experience

In-Class & Hybrid Students:

- Collaborate with peers on live, interactive case studies and strategy development
- Engage in group activities that prepare you to tackle leadership challenges

Fully Online Students:

- Stay fully engaged through interactive forums and online group projects.
- Share insights, and develop strategies through discussions and team-based work.

All Students:
Expect to create clear, compelling 5-slide strategic briefs for each case study—a critical skill for influencing stakeholders as a product manager or engineering leader.

Course Prerequisites

Graduate standing with a degree in engineering, science, or a related technical field.

Are you ready to take charge, evolve products, and drive lasting success? Let's get started—*EGR 507 is where leaders are made.*

Instructor Informaiton

Ed Addison
Adjunct Lecturer, Systems and Industrial Engineering
eraddiso@ncsu.edu (preferred method of communication)
Cell: 910-398-1200
Bio can be found on LinkedIn: /edaddison/

Appointments for **Zoom meetings** can be scheduled by emailing the instructor at **eaddiso@ncsu.edu**.

Regular availability: **Wednesday afternoons/early evenings**, or other times by arrangement

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Textbooks

Grieves, M. (2006). *Product lifecycle management: Driving the next generation of lean thinking*. McGraw-Hill Education. **ISBN:** 978-0071452304 $30

Haines, S. (2019). *The product manager's survival guide: Everything you need to know to succeed as a product manager* (2nd ed.). McGraw-Hill Education. **ISBN:** 978-1260143478. $23

Haines, S. (2021). *How to create a business case* (Business Acumen How to Guides). Business Acumen Institute. **ISBN:** 979-8782199722. $12

Haines, S. (2024). *Product strategy and roadmapping: A guided tour through the strategic planning process for product managers* (Product Management Professionals). Business Acumen Institute. **ISBN:** 979-8877546554. $20

Course Format

This course primarily uses a case-study approach, providing immersive, real-world learning experiences in product management. Weekly coursework—whether for online or in-class students—includes five key components:

1. A **60-minute content presentation** on the case and underlying product management principles.
2. **50–60 pages of readings** assigned per week, more in the first month
3. A **case planning meeting** with your team.
4. Active participation in **classroom and/or forum discussions** about the case with your team and instructor.
5. Preparation, delivery, and engagement in **case study presentations and commentary** in alternate weeks during the case study period of this course.

The course begins with an introductory **four-week period** covering foundational product management principles, supported by extensive reading and culminating in a graded online quiz. An **individual final paper** is required at the end of the course, allowing students to apply concepts to a product of their choosing.

- **Campus Sections**: These hybrid sections include in-person instruction, group case presentations, and class discussions. Attendance is mandatory. Team coordination and presentations occur in class, while forum discussions, readings, case preparation, and the quiz take place online.

- **Online Sections**: These sections are fully online, with recorded weekly lectures posted by Monday night on Panopto and linked in Moodle by Tuesday morning. Students deliver case presentations by submitting MP4 video recordings.

Follow the weekly course schedule carefully. A weekly announcement will summarize tasks and deadlines.

Course Project

Individually, each student will complete a **Product Management Plan (PMP)**—also referred to as a **Product Masterplan**—for a product of their choosing that aligns with their job or academic interests. This comprehensive plan must cover:

1. A **business case proposal** for the chosen product halfway through the course.

2. A **10-page final paper** detailing the complete Product Management Plan.

Further guidelines and requirements for the project can be found under “Course Documents” in Moodle.

Detailed Course Outline

Module 1: Kickstarting Your Product Management Journey

- *Course Introduction*: Unpack the course structure, goals, and expectations.
- *The Product Manager's Role*: Discover the dynamic responsibilities of product managers and their impact on engineering management.
- *Why Product Life Cycle Management (PLM) Matters*: Explore how PLM drives innovation and success throughout a product's lifespan.
- **Reading**:
    - Grieves (2006): Chapters 1-2
    - Haines (Survival Guide) (2019): Chapter 1-2

Module 2: Mastering Product Life Cycle Management and PLM Tools

- *What is PLM?* Understand the foundational framework and processes of Product Life Cycle Management.
- *Tech Tools of the Trade*: Hands-on overview of leading PLM software, tools, and platforms.
- *PLM in Action*: See how PLM integrates into engineering management to streamline workflows and enhance product outcomes.
- **Reading**:
    - Grieves (2006): Chapter 3, 5
    - Various Websites and Articles on PLM Software

Module 3: Designing Winning Product Strategies

- *Strategic Planning Across Stages*: Learn how to guide a product through growth, maturity, and decline phases.
- *Market and Competitor Analysis*: Develop critical skills to evaluate market trends and outsmart the competition.
- *Stand Out in the Crowd*: Master positioning and differentiation to create irresistible product value.
- **Reading**:
    - Haines (2024): *Product Strategy and Road Mapping – Entire Book*
    - Haines (2019): Survival Guide, Chapter 7

Module 4: Crafting a Powerful Business Case

- *Building the Business Case*: Identify a compelling case's key components that get buy-in.
- *Financial Forecasting Made Simple*: Learn to forecast revenue, assess risks, and measure ROI.
- *Interactive Challenge*: Test your knowledge with an Online Quiz (20 multiple-choice questions, open-book, 40 minutes).
- **Reading**:
    - Haines (2021): *How to Create a Business Case* (entire book)

Module 5: Driving Sales and Marketing Success

- *Lifecycle Marketing Mastery*: Unlock techniques to optimize sales strategies at every product stage.
- *Channels, Pricing, and Segmentation*: Learn how to target the right audience with the right approach.
- *Case Study 1*: Tesla Cyber Truck | Innovative, market-changing strategies in action.
- *Group Project*: Prepare for Case Study 1 presentations (due Week 6).
- **Reading**:
    - Haines (Survival Guide) (2019) Chapters 5-6

Module 6: Tesla Case Study Showdown

- *Group Presentations*: Deliver engaging 5-slide, 10-minute team presentations.
- *Classroom Insights*: Participate in a collaborative feedback session to sharpen your analysis.
- **Reading**:
    - Case Study Document
    - Outside articles on Tesla Cyber Truck

Module 7: Elevating Customer Service and Support Strategies

- *Support That Wins Loyalty*: Discover best practices in customer service, warranty management, and training.
- *Case Study 2*: Medtronic | Learn how world-class customer training elevates product adoption.
- *Group Project*: Prepare for Case Study 2 (Medtronic Smart Insulin Pen and Guardian Glucose Monitor) presentations (due Week 8).

- **Reading**: Case Study Document and Assigned Articles

Module 8: Medtronic Case Showdown

- *Group Presentations*: Showcase your findings with concise, impactful presentations.
- *Peer Learning*: Dive into a lively discussion and feedback session.
- **Reading**:
    - Outside articles on Medtronic's customer service strategies.

Module 9: Outsourcing, Supply Chain, and Manufacturing Excellence

- *Outsourcing Decisions*: Learn to evaluate and manage outsourcing and supplier partnerships.
- *Tackling Supply Chain Risks*: Analyze strategies to mitigate disruptions and optimize manufacturing processes.
- *Case Study 3*: Boeing 787 | Complex supply chains and global challenges.
- *Group Project*: Prepare for Case Study 3 presentations (due Week 10).
- *Business Case for Final Project*: DUE
- **Reading**: (for next two weeks)
    - Assigned Articles on Supply Chain and Outsourcing
    - Grieves (2006), Chapter 7
    - Assigned PDF Chapter on Manufacturing
    - Boeing 787 case Document

Module 10: Boeing 787 Case Study Debrief

- *Group Presentations*: Share actionable insights and lessons learned.
- *Collaborative Discussion*: Reflect on supply chain risks and solutions.
- Extensive Discussion of Manufacturing and the Product Manager's Role
- **Reading**:
    - The same readings continued from Module 9

Module 11: Logistics, Maintenance, and End-of-Life Strategy

- *Optimizing Product Logistics*: Learn to streamline distribution and post-launch operations.
- *Sustainable Product Retirement*: Explore environmentally friendly and cost-effective end-of-life strategies.
- *Case Study 4*: Northrop Grumman APG-68 Radar for F-16 | Innovative end-of-life planning in defense systems.
- *Group Project*: Prepare for Case Study 4 presentations (due Week 12).
- **Reading**:
    - Outside Articles on: *Logistics, Maintenance*
    - Grieves (2006), Chapter 8
    - Case Document for Northrop Grumman APG-68 Radar

Module 12: Northrop Grumman APG-68 Radar Case Study Insights

- *Group Presentations*: Demonstrate your expertise with polished presentations.
- *Interactive Reflection*: Engage in collaborative class feedback.
- **Reading**:
    - Outside articles on end-of-life strategies for defense systems.

Guest Speaker

- *Guest Speaker to Present Product Management at a Specific Organization*
- **Reading**:
    - As recommended by the guest speaker

Module 13: Mastering the Complete Product Lifecycle

- *Integrating What You've Learned*: Connect the dots across the product lifecycle and PLM strategies.
- *Your Career Roadmap*: Explore exciting career paths in product management.
- *Staying Ahead*: Plan for continuous learning and professional growth.
- *Participation Report*: DUE
- **Reading**:
    - Grieves (2006): Chapters 10-11
    - Haines (2019): Survival Guide, Chapter 11
    - Product Manager's Survival Guide – Chapter 11

Final Projects and Celebrating Your Achievements

- *Final Paper Showcase*: Present your Product Life Cycle Management Plan.
- *Peer Reviews*: Provide constructive feedback on at least five peers' papers.
- *Course Wrap-Up*: Reflect, celebrate accomplishments, and look ahead to your future success.
- **Reading**: None assigned; focus on project work.

Assignments and Grading Formula

Assignment	Weight
Case Studies (4 group presentations)	10% each – total 40%
Business Case for Final Paper	10%
Online Quiz	10%
Participation via Online Forums	15%
Final Paper (PM Plan)	25%

Grading Policy and Rubrics

For all assignments other than quizzes and exams (which are graded based on percentage correct), a detailed grading rubric will be provided. These rubrics outline specific evaluation categories, each scored from 0 (lowest) to 5 (highest). The numerical score corresponds directly to the percentage of available points earned. Most students receive scores of 4 or 5 unless the work is incomplete, off-topic, or below expectations.

Each assignment also includes a **rank-order component**, which accounts for **20% of the assignment grade**. In this category, student work—whether an individual submission, report, or group presentation—is evaluated holistically by the instructor, the TA, and often one or more outside reviewers. Submissions are ranked from highest to lowest overall quality within the class.

- The top-ranked submission receives 100% of the 20 points.
- The lowest-ranked receives 50% of the 20 Points (or less if unsatisfactory)
- All others are distributed linearly in between

This approach reflects the relative distinction in work quality and encourages excellence while maintaining fairness. On average, students can expect to receive around 15 points out of 20 in this category.

If all students score perfectly in rubric-based categories (which is rare), the class average would be capped at 95%. Realistically, final averages typically range between **88% and 92%**, reflecting the high performance expected in this graduate-level course.

Final course grades are assigned automatically using the NC State University numerical grading scale. While grades below a B– are rare for passing students, **grades of A+ are not commonly given**, and **earning an A requires sustained excellence across all evaluated work**. This ensures that final grades carry meaningful distinctions and reflect genuine performance.

Please note: Grades are not subject to negotiation at the end of the term. All students are encouraged to review feedback early and often and to seek guidance on how to improve during the semester—not after final grades are posted.

DUE DATES FOR SUMMER 2025

ASSIGNMENT	DUE DATE
Weekly Discussion Forums	Initial Post Due: Thursday All Remaining Posts Due: Sunday See Each Forum for # of Posts Required See Each Forum for Instructions and Exceptions
Online Quiz	Available: June 2 Due Date: June 8
Business Case for Proposed Project	Due Date: June 17
Case Study #1	Post Presentation Link: June 11 Post Slide Deck: June 11 Reply to Forum Questions: June 15
Business Case for Project Proposal	Due Date: June 17
Case Study #2	Post Presentation Link: June 25 Post Slide Deck: June 25 Reply to Forum Questions: June 29
Case Study #3	Post Presentation Link: July 10 Post Slide Deck: July 10 Reply to Forum Questions: July 14
Case Study #4	Post Presentation Link: July 18 Post Slide Deck: July 18 Reply to Forum Questions: July 22
Final Project	Presentation/Slide Deck: NOT REQUIRED Written Paper: Due July 29

Course Policies

Class Attendance

- **Campus Students**: Attendance is mandatory, with credit awarded for attending at least **12 class sessions**. Attendance will be recorded during each session.
- **Online Students**: Attendance is fulfilled by active participation in **case study forums** and completing required course activities.

For both sections, students must complete **all Moodle checkboxes** to confirm completing each required course component. Attendance is part of the overall **participation grade**.

Late Assignments – Assignments must be submitted by the due date. Late assignments are penalized 10% and accepted up to one week late, but no assignment may be submitted after the end of the course. No assignment may be submitted after the last day of class. If you have a valid excuse approved in advance based on business or family commitments, or illness, an additional 3 days may be granted. Moodle dates will not be changed unless there is an error in the way they were posted.

Posting to Discussion Forums – Discussion forums are an important part of this course and a way to dialog about the course content extensively. The initial questions will be posted at the beginning of the week, but additional questions may be added at any time. These are intended to be conversations, not solo essays. You are not graded as if it was a homework assignment, but rather you are graded for your active contribution to an intelligent conversation.

You need not be comprehensive in your posts. Instead, just keep the conversation flowing and post only one idea at a time. You cannot be engaged in a conversation by waiting until Sunday night and then doing all your posts at once. You should log in periodically between Wednesday and the end of the week. You are required to read everything that any student posts. It is expected that you spend two hours per week researching, reading, and posting to the forum. You should make an initial post by Thursday, and at least two (and not more than three) follow-up posts by Sunday, preferably with one of them posted before Sunday to keep the conversation flowing. The initial post should contain an illustration and references and be about two paragraphs long. The follow-up posts should be conversational with your classmate.

Incomplete Grades. You may be given an Incomplete grade for the course if you were not able to finish for an unforeseen circumstance. This requires permission from the instructor by Module 12. Incomplete grades must be made up within 30 days.

Accommodations. "Reasonable accommodations will be made for students with verifiable disabilities. To take advantage of available accommodations, students must register with the Disability Resource Office at Holmes Hall, Suite 304, 2751 Cates Avenue, Campus Box 7509, 919-515-7653. For more information on NC State's policy

on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (NCSU REG 02.20.01)."

Digital Course Components. Students are required to access this course through Moodle. Students will need a laptop, desktop or other access to a computer and the internet to do so. The course will use the software Turnitin to detect plagiarism and inappropriate use of ChatGPT in written assignments.

Privacy. Students may be required to disclose personally identifiable information to other students in the course, via digital tools, such as email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

Generative AI and Grammarly. The use of Generative AI is permitted and encouraged in this course for conducting research, editing writing, even generating the first pass of your decks, and for creating and reading summaries. However, if you use it in your writing, you must: a) write your own final draft, and b) cite the fact that you used it in your references, and cite any references of the material it produced for you. Use of Grammarly is encouraged and is permitted without a requirement for attribution.

Academic Integrity. Students are required to comply with the academic integrity standards in the Student Code of Conduct (NCSU POL11.35.01). Students may not turn in the work of other students and claim it is theirs. Students must abide by the instructions on assignments and quizzes as to what is permissible for that assignment or quiz. "Violations of academic integrity will be handled in accordance with the Student Discipline Procedures (NCSU REG 11.35.02)."

Additional NC State Rules and Regulations. Students are responsible for reviewing the NC State University Policies, Rules, and Regulations (PRRs) which pertain to their course rights and responsibilities, including those referenced both below and above:

Equal Opportunity and Non-Discrimination Policy
Statement https://policies.ncsu.edu/policy/pol-04-25-05
with additional references at https://oied.ncsu.edu/divweb/policies/

Code of Student Conduct
https://policies.ncsu.edu/policy/pol-11-35-01.

Additional Academic Integrity Policy.
This course has zero tolerance for students who
- ...receive unauthorized aid from others/internet on graded events.
- ...give unauthorized aid to others/internet regarding graded events.
- ...fail to provide proper attribution for help received (plagiarism).
- ...post course materials online without the instructor's permission.

Students who engage in these activities may be referred for academic discipline or may receive a failing grade in the course.